

Designing an AI Bond for Growth and Shared Prosperity in the UK

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Summary

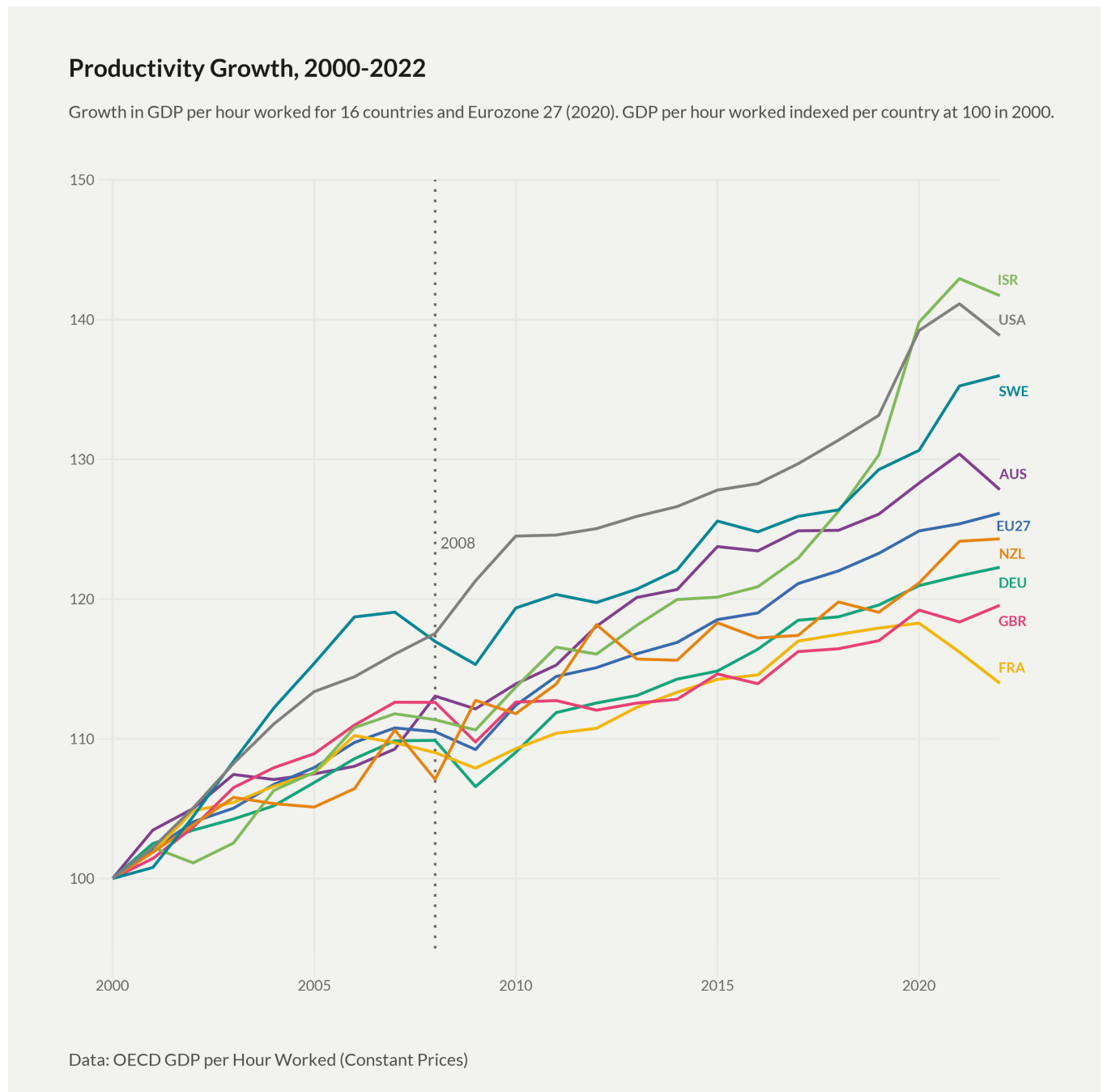
- Capitalising on the growth potential of AI and associated technologies provides a vital opportunity to improve UK economic growth. This is an urgent issue: UK real productivity growth has fallen below peer economies since 2008, driven in part by chronic underinvestment.
- Policymakers face two primary economic challenges with respect to integrating AI into the economy:
 1. Under-investment from the private market given a lack of coordination and inability to capture excess returns from agglomeration and spillovers.
 2. Exacerbated inequality from a heightened return on capital and regional concentration.
- We propose the UK government design and operationalise an AI bond to link and solve these challenges. Connecting the two missions — boost innovation and distribute returns — via a financial instrument could coordinate and increase investment in innovation while distributing the returns more equitably, without distortionary measures.
- Purchases of the bond would be used to build on the UK's head start in AI, particularly in London. As a centralised, public investment vehicle, the resulting fund could design an investment strategy that targets all components of the AI innovation pipeline, creating excess returns from agglomeration and spillovers.
- Proceeds from the bond — bolstered by the excess return — would be used to distribute the gains across the UK as a whole, including to those who are not directly involved or invested in the AI industry.

The Challenge

UK real GDP growth and productivity have stalled relative to peer economies since the 2008 financial crisis (Figure 1). This in part reflects [declining investment](#) in the UK, which has fallen as a share of GDP since 1990, and now substantially lags behind G7 peers such as the USA,

France, and Germany. Stimulating growth is urgently needed to raise real living standards and fund the growing cost of public services. Innovation holds the key to that growth, and AI and its associated technologies offer a promising channel to focus on.

Figure 1: UK real productivity growth has fallen below peer economies since 2008



London has existing comparative advantages for the AI industry and is well-equipped to establish itself as the second global AI hub, after San Francisco. Since the founding of DeepMind in 2010 at University College London, the city has attracted tech giants and investors including [Google](#), [OpenAI](#), [Anthropic](#), [Microsoft](#), and [Andreessen Horowitz](#). This has been met with research and development (R&D) investments, such as ARIA, a [new agency](#) to fund breakthrough technologies, and the [Ellison Institute of Technology](#) at Oxford University. To

date, the UK's regulatory strategy has stood out for its commitment to advancing AI innovation and safety with a flexible, industry-specific approach. For example, the first international summit [on AI Safety](#) in November 2023 was a strong signal of global leadership.

AI presents an incredible opportunity for the UK economy; however, two primary challenges in its integration remain. First, building a strong AI ecosystem requires large-scale, coordinated investment in the full AI development and commercialisation pipeline to maximise growth, agglomeration benefits, and spillovers. The UK faces a significant challenge in securing the substantial capital investment needed to maintain the country's competitive edge. Unlike the US, where deep capital markets, the presence of the tech epicentre in Silicon Valley, and a growing presence in chip production provide access to vast resources, the UK's capital markets are shallower and may struggle to mobilise the necessary funds. Beyond the strength of domestic capital markets, it is also [well-established](#) that private markets under-invest in innovation due to market failures. In particular, individual agents are unable to capture returns from agglomeration and spillovers. Given innovation offers dynamic benefits to growth, under-investment presents a major opportunity cost.

Second, the UK needs to ensure this process does not exacerbate existing economic inequalities. The adoption of AI technologies is likely to increase the capital share of GDP and amplify the return on capital investments, such as equity holdings. [Research](#) shows that previous episodes of automation raised the return on risky assets and increased the capital income of wealth holders. Given the highly concentrated nature of the wealth distribution in the UK, this trend could worsen income and wealth inequalities. This is especially true as the little wealth holdings many people have are not likely to see higher returns due to AI. Much of the population holds the majority of their wealth in their home, and very few directly invest in equity. [Recent work by the IMF](#) highlights that in addition to holding more wealth, high-income households in the UK are also more likely to have exposure to equities, which are more likely to benefit from widespread AI adoption.

These goals come into tension when considering the returns to agglomerating talent and resources. London is the natural candidate, with existent comparative advantages that could be catalysed by coordinating public and private investment. But pursuing this strategy will likely exacerbate regional and economic inequalities. The Institute for the Future of Work has found that regional disparities in technological transformation are already '[stark and accelerating](#)'. The concentration of AI-related jobs and economic activity in the capital could lead to a disproportionate influx of talent and resources, leaving other regions struggling to attract and retain skilled workers and investment. Moreover, as many jobs potentially displaced by AI automation may be located outside of London, the uneven distribution of benefits and costs could deepen the economic divide between the capital and rest of the country.

The Opportunity

To deliver on its promise of growth and meet the need to distribute returns more equitably, the UK government should design and offer an AI bond for popular investment.

Purchases of the bond would finance investment in AI. Such investments could include everything from minor stakes in accelerators, private technology companies, or investment vehicles (such as VC funds) to chip manufacturing and academic grants.

Large-scale, coordinated, government-backed investment holds unique potential to generate large excess returns, as market failures in this space lead the private market to underinvest. There are two returns to coordinated investment that private agents fail to internalise:

1. **Agglomeration:** There are significant agglomeration benefits when AI firms, talent, and supporting infrastructure concentrate in one location. However, no single firm captures the full upside, leading to a coordination failure where each waits for others to move first. A government investment vehicle can catalyse this process, providing the critical mass and upfront commitment to kickstart a self-reinforcing agglomeration dynamic that attracts more firms, specialised investors, and a deep talent pool. A public investment vehicle can also provide the essential public goods, like data centres and digital infrastructure upgrades, for London to become a competitive AI hub.
2. **Spillovers:** AI R&D could generate significant positive externalities through knowledge spillovers across firms and industries. Upstream breakthroughs, whether in core algorithms, hardware innovation, or new machine learning architectures, can enable a wave of downstream applications and use cases. Private companies will likely underinvest in these developments, as they will not capture the full return. Similarly, investments in AI talent development through training programs inadvertently benefit other employers, who can poach skilled workers. A public fund taking a portfolio approach could internalise these cross-cutting spillovers by backing the full AI stack, from basic research to talent pipelines to computing resources and commercialization pathways. For example, a public fund could directly sponsor AI education programs or even underwrite salaries for researchers working on critical research in healthcare, climate, and defence — interventions unattractive for profit-driven firms. Initiatives like [OpenAI residency](#) provide a model for developing an AI skills pipeline feeding into industry or government roles. We detail below why a public vehicle is uniquely placed to realise these excess returns via non-conventional channels, such as tax receipts.

Research suggests that these market failures could have large economic consequences (see FAQs for a review of the estimates from economics research). [Estimates](#) suggest agglomeration benefits boost innovation by over 10% in the US, with even larger impacts in fields like computer science. The social returns to R&D, accounting for cross-firm spillovers, have been [estimated](#) as more than double the private returns. There is [complementary evidence](#) that government investment in innovation crowds in private investment, rather than substituting it. The substantial wedge between private and social returns indicates pervasive underinvestment and considerable scope to expand R&D spending, while still generating marginal social returns exceeding marginal costs. These excess returns, after management costs, hold the potential to make this policy budget-neutral.

With careful design, the government can integrate a redistributive element into the structure of returns. This could come through AI dividend payouts to all citizens, or public financing of policies to improve social mobility in communities further removed from growing industries.

There is also an opportunity to improve financial market inclusivity for underserved segments. A significant portion of UK households, especially those with lower incomes, do not actively invest due to lack of familiarity with financial products, low trust in institutions, or behavioural barriers. The AI bond represents an opportunity to onboard these households into productive asset ownership via a simple, government-backed vehicle requiring modest investment amounts. A focused public awareness campaign could help build literacy around the investment rationale and demystify market participation. This expanded investor base, in turn, unlocks an additional pool of capital to productively fund the UK's AI ambitions, while enhancing the economic resilience of British households.

There is precedent for this policy in two UK initiatives: premium bonds and green gilts. The premium bond is a lottery bond first issued by the government in 1956. The government guarantees the bond (in the sense of committing to buy it back at its original price). Every month, interest is dispensed to bond holders in the form of a lottery. The bonds have been immensely popular, with one in three Britons holding them.

Green gilts — a sovereign green bond intended to fund “projects to tackle climate change, finance much-needed infrastructure investment, and create jobs across the country” — were [first issued in 2021](#). Initial gilts were 12-year bonds, with a second wave having 32-year maturity, both launched via syndication. The issuance raised a total of 16.1 billion GBP (cash) in its first year (2021-22), and 36 billion GBP over the first 3 years.

The distributive component of the AI bond has some precedent in sovereign wealth funds, such as the Government Pension Fund of Norway and the Alaska Permanent Fund. And [US Treasury savings bonds](#) are similar in their consumer-inclusive design.

Plan of Action

The AI bond requires careful design choices. This Plan of Action outlines one path, but there are additional options (outlined in FAQs) that trade-off lower risk to the government against flexibility in investment allocation.

Funding

The AI bond would be issued with a known face value and medium-term maturity. The core funding would come from sovereign debt markets, with issuances managed by the UK Debt Management Office (DMO). This is an established and scalable funding channel that leverages the government's ability to raise debt affordably.

Similar to green gilts, the issuance would be available to all investor classes. To encourage broader retail participation, the AI bond could feature a preferred issuance tranche with modestly higher returns available exclusively to individual citizen/resident investors. This preferred tranche could be integrated with the existing Individual Savings Account (ISA) infrastructure in the UK. Individuals would be able to purchase the AI bond through common

platforms for ISA accounts, with purchases counting toward annual ISA allowance limits. Mirroring programs like the US Treasuries for individuals, purchase limits could be set to ensure widespread distribution rather than concentration among few buyers.

Investment

Proceeds from the bond would be invested in the full stack of the AI pipeline. Investments in AI applications (such as healthcare, defence, and energy) are encouraged, as well as initiatives focused on the basic science and infrastructure underlying AI innovation. To create the excess return from agglomeration and spillovers, the bond should also make less traditional investments outside of equity stakes, such as grants or loans to AI research institutes and training programs to fund core R&D. Some share of investments should be restricted to UK-based firms and public infrastructure initiatives, such as [GB Cloud](#) (also proposed by UK Day One). But a minority share would be invested in AI or adjacent industries in UK allies — such as chip production in the US or Netherlands, or healthcare AI initiatives in Germany and France — to diversify the fund's investments.

Capital should be deployed with a view to long-term returns and safe development of AI. To ease funding of the return early in the bond's lifetime, some investment can be allocated to equity stakes in mature firms, or UK-based investment funds with sector expertise and shorter return horizons. This diversity of investment options means the scheme can construct a portfolio balanced across the full AI value chain — from basic research to tech transfer and commercialization pathways. Funding from the bond should, however, be tightly coupled to AI and related innovation priorities. That being said, the bond should not be responsible for funding all areas of policy relevant to AI. For example, the opportunity and impact of AI should be independently factored into education and immigration policies to make sure the environment is amenable to growth of the industry.

Returns

The fixed return will first be paid out to bond holders, after which the excess return will be split between management fees and an AI dividend. Seniority is as follows:

- **Principal and interest payments:** Bond holders will have the first claim on returns. Given these assets will be largely risk-free as a government gilt, the interest will be low. The most recent green gilt issuance paid a nominal return of 4.078% at a 10 year maturity. Given expected decreases in the risk-free rate, we suggest a nominal return of around 4% (noting this could be lower if, by implementation, the risk-free rate and inflation fall further), and a maturity of 15 years.

- **Management fees:** Used for salaries for the fund managers, office space, and other day-to-day operations. These fees can come out of the returns exceeding the cost of the bond repayment to ensure the proposal is budget-neutral. This is the primary resource cost of the AI bond. Investments should be managed independently of the government (with strong partnership and consultation) to align incentives for long-term growth, bring in the required expertise, and provide continuity over successive governments. Post-COVID, there is also [concern around cronyism and corruption](#), which a more independent and transparent investment initiative will be more robust to. Routine independent impact assessment (for example, of the portfolio and returns) will also help ensure the long-term goals are kept as a north star.
- **AI dividend:** All remaining returns can then be directed towards the UK-wide AI dividend. This could come in the form of direct payments to citizens via tax returns (which could be stratified by income or to those least likely to benefit from AI), or via the funding of public welfare projects intended to mitigate the unequal returns to AI and promote equality of opportunity in the new economy.

How will this fund generate above-market returns?

The fund's ability to internalise positive externalities from AI advancement — including knowledge spillovers, agglomeration benefits and productivity gains — allows it to monetize returns that individual firms cannot capture. Realising these dispersed social returns boosts the overall portfolio performance. Beyond the direct spillovers to assets held in the portfolio, the government will also be able to internalise the broader social return (which [estimates](#) suggest could be as much as 20% higher than the private return). This could include higher wages and corporate incomes resulting in a higher tax income for the government, and greater private investment in public amenities.

As a government-backed instrument, a bond structure has the ability to capture risk premia that private investors would demand for taking on uncertain payoffs. By directly funding higher risk, higher return opportunities across the AI ecosystem, the bond portfolio can target outsized returns relative to the risk-free rate it must pay on the debt issuance. The government is well-positioned to bear this risk as a patient, risk-neutral investor representing the collective interest of UK citizens and taxpayers. The downside of this is that over short horizons it challenges the extent to which this policy is budget neutral, as capturing these premiums means the government would have to bear losses in adverse scenarios. However, given the government's longer term investment horizon, lack of capital constraints and ability to diversify relative to individual households, this risk distribution is socially efficient.

To get a sense of how large these excess returns could be, we do a simple back-of-the-envelope calculation using historic UK returns. Between 1984-2022, the [FTSE 100](#) had a 7.5% annualised nominal return. Given the estimates in the literature finding the social return on R&D to be more than double the private return (see Table 1), we might expect the AI bond to be able to achieve a gross return of up to 15%. Assuming a bond issuance cost in line with green gilts of 4% and a 1% operating cost, this would leave an excess nominal return of 10% annualised. Assuming a total initial issuance of 50-100 billion GBP (compared to 36 billion GBP

over the first 3 years for Green Gilts), this would equate to an annual return of 5-10 billion GBP, or 75-150 GBP per person in the UK. For a family of four, this could total nearly 600 GBP a year, which could grow as the scheme expands.

In the first 100 days of government, the Chancellor of the Exchequer and the Secretary of State for Science, Innovation, and Technology, should form a committee with representatives from the Treasury, the Department of Science, Innovation, and Technology, as well as the Bank of England and Debt Management Office, to create a detailed proposal on the bond's structure.

- We suggest the committee take two months to convene with regular meetings to hear expert evidence from leaders in finance, economics, computing, and AI. The committee should endeavour to scope out public and private investment opportunities in the space, frictions and constraints in AI for existent entrepreneurs, and potential social returns to AI and associated technologies.
- We encourage the committee to commission a representative survey of UK citizens and residents gauging understanding of and perceptions of AI and its associated industry, as well as testing elements of a public information campaign in a hypothetical choice setting. The insights gained will be crucial in designing an effective information campaign to support the bond and encourage widespread investment. The survey design should take c. 1 month, and collection of data c. two weeks. Analysis can take place over the following two weeks, meaning findings would be available at the end of two months.

The committee should finalise an initial proposal for consideration by Number 10, the Cabinet, Shadow Cabinet by the end of 100 days.

FAQs

How large are potential excess returns?

In the table below, we outline a range of estimates of the social returns to research and development, agglomeration, and spillovers from economic research.

PAPER	ESTIMATE + DETAILS
Bloom, Schankerman, Van Reenan (2013)	Estimates the impact of R&D spending (instrumented by R&D tax credits) by other firms close in technology space on market value, patenting and productivity. Using the coefficients to estimate the marginal private and social return of R&D gives a social return roughly double the private return (approximately 20-40% private return versus 55-60% social return).
Azoulay, Graff Zivin, Li, and Sampat (2019)	Using marketed drugs to form a back-of-the-envelope calculation of the return on government R&D funding, and assigning a present discounted value of 3.5 billion USD to each drug, they find an additional 10 million USD in NIH funding leads to 14.7 million USD in patent value, giving approximately a 50% return.
Jones and Summers (2020)	Average social rate of return on total R&D expenditures of 67%. After adjustment (for capital deepening, diffusion, and other factors), average and marginal social returns of R&D are estimated as at least 20%.
Moretti (2021)	Using longitudinal data on inventors and locations, estimates the impact on the number and quality of patents produced of moving to a high-tech cluster. Finds that a 1% increase in the number of inventors in a cluster increases all inventors patenting output by 0.07%. Combining these estimates in a structural model gives the magnitude of productivity benefits from agglomeration, with approximately a 11-15% return.
Fieldhouse and Mertens (2023)	Estimating the production function elasticity of non-defense government R&D capital in the post-war period, the authors find implied returns of 150-300% over the postwar period. These results imply substantial under-supply of nondefense R&D. Government-funded R&D accounts for c. 25% of business-sector TFP growth in the same period.

What are the primary risks of this proposal?

Investment risk is inherent, as funded firms or projects may underperform or fail, leading to losses for the government. This is particularly true if a large domestic focus leads to concentrated risk and leaves the bond exposed to idiosyncratic shocks in the UK AI sector. This presents political risk to any government in power at the time of a significant risk or decrease to the portfolio value. We see clear upfront public information campaigns as a mitigation strategy for investors, as well as independent management committed to long-term gains and maximising returns within a well-defined risk appetite.

How does this proposal compare to other policy levers, such as taxes or universal basic income (UBI)?

Taxes could effectively redistribute gains from AI adoption across regional and socio-economic lines, generating revenues for education, training, and unemployment support for those displaced. However, they are distortionary and may disincentivize adoption, compromising the UK's growing reputation as an AI hub.

The main tax instruments available would be a corporate tax (on profits) or a tax on the use of AI. Designing and executing a corporate tax with minimum distortions would be incredibly challenging. Policymakers would likely have to implement a blanket corporate tax increase, or define an AI company and exercise specific taxes on these entities. The latter exercise is becoming increasingly difficult as more companies integrate AI into their product and internal operations. In addition, a corporate tax is traditionally drawn on profits, and many AI firms – including the AI divisions within [big tech](#) companies – have yet to see a clear path toward [profitability](#). Alternatively, the UK could directly tax the use of AI. An example of a direct tax on a new technology was the European Parliament’s vote to tax the use of industrial robots given potential labour displacing effects. [Humlum \(2021\)](#) has modelled that directly taxing the use of robots temporarily reduces job losses, but ultimately hurts productivity. A direct AI tax would do the same, potentially reducing displacement, but at the cost of major technology players reconsidering their decision to invest in the UK.

Perhaps most importantly, taxes send a negative signal regarding the government’s attitude towards novel technologies. In contrast, our proposed AI bond explicitly links broad public investment and a strong, pro-innovation attitude to distributive justice, without resorting to new taxes that distort incentives and discourage AI adoption.

Similar to taxes, implementing a universal basic income presents a way to mitigate the risk of greater income inequality. UBI, however, offers a solution to distributive concerns around the growth of AI, without a funding mechanism in place. It is unclear how to budget for its huge anticipated cost, except perhaps through distortionary instruments, such as taxes. Assuming a modest UBI of 10,000 GBP, it would cost roughly 660 billion GBP annually, which represents forgone funding for initiatives such as AI research and education. The proposed bond generates rather than consumes revenues, while presenting UK citizens/residents with the opportunity to see medium- to long-term upside, despite no direct involvement with the AI ecosystem.

Are there alternative designs of the instrument?

An alternative design to a traditional bond issuance is a bond-fund hybrid that allows for both “citizen investors” and large-scale participation from traditional financial institutions. The structure of the investment vehicle borrows from that of a venture capital or private equity fund, with components reflecting its public origination.

This design would transfer risk from the government to investors. In doing so, however, it would likely restrict the amount of capital that could be raised. Based on [participation rates](#) in Stocks and Shares ISAs, we conservatively estimate that approximately 2 million citizens would invest over three years. With an average investment of 5,000 GBP over that three year period, we anticipate raising 10 billion GBP from citizens/residents. Given many institutional investors have interest in increasing exposure to AI, we estimate around 10 billion from this channel, leading to around a 20 billion GBP fund overall.

This figure is lower than the amount raised by green gilts over their three issuances, and substantially smaller than Alaska, Norway, or Singapore's sovereign wealth funds. It is large, however, compared to long-established venture capital funds with an analogous mandate. The lower projected fundraising also lowers the potential for returns that meaningfully redistribute returns across the UK population more broadly. Additionally, the fund model makes it more difficult to make long-term investments in non-traditional areas such as research and public infrastructure, as investors expect liquid financial returns within 10-15 years. On the other hand, a bond allows for more flexible investments, as the government can take a longer time horizon to realise returns, and is better placed to capture those via indirect channels such as tax receipts.

A bond-fund hybrid also complicates investment allocation and return payout. A management fee could be charged (c. 1% management fee, slightly lower than the 2% industry rate) to make the policy budget-neutral. For a 20 billion GBP fund, a 1% management fee translates to 200 million GBP. Most funds of this size have between 50-150 employees. Carry could be exercised differently on different types of investors. In line with the standard fund model, institutional investors will see 20% carry, while citizen investors will receive a lower carry rate of 10% on returns. As an example, if the 20 billion GBP fund doubled over 10 years, it would generate 3 billion GBP in carry assuming a 50-50 split between institutional and citizen investors. This would not be sufficient to generate a substantial dividend for the UK population, but could be used to fund public welfare projects targeted at areas or individuals unable to participate in the AI ecosystem.

Authors

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agreements) on aggregate innovation, and the impact of AI on inequality, and how policies that aim to correct this can influence adoption. She did her undergraduate degree at Oxford, masters at University College of London, and previously worked at the Bank of England.